Validation Report

Piratini Energia S.A.

Validation of the
"Piratini Energia S.A. Project", Brazil

Report No. 644484
Rev. 1
2005, October 31

TÜV Industrie Service GmbH – TÜV SÜD Group
Carbon Management Service
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Report No.	Date of first issue	Revision No.	Date of this revision	Certificate No.
644484	July 27, 2005	1	October 31, 2005	-

Subject:	Validation of a CDM SSC Project
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Client:	Koblitz Ltda. Av. Cônsul Vilares Fragoso, 291 Recife 50760-540 Pernambuco Brazil
Contract approved by:	Werner Betzenbichler
Report Title:	Validation of the "Piratini Energia S.A. Project", Brazil
Number of pages	22 (excluding cover page and annexes)

Summary:

The Certification Body "Climate and Energy" has been ordered by Piratini Energia S.A. to validate the above mentioned project.

The validation of this project has been performed by document reviews, interviews by e-mail and on-site inspection, audits at the locations of the projects and interviews at the involved ministry.

As the result of this procedure, it can be confirmed that the submitted Project Design Document is in line with the requirements set by the Marrakech Accords and the Kyoto Protocol. Hence the project as submitted by the recent PDD will be submitted for registration as CDM project by UNFCCC.

Prior to the submission of this validation report to the CDM Executive Board, TÜV SÜD will have to receive the written approval of the DNA of involved parties, including confirmation by the DNA of Brazil that the project assists in achieving sustainable development.

Additionally the assessment team reviewed the estimation of the projected emission reductions. We can confirm that the indicated amount of emission reductions of 1,212,773 tonnes CO_{2e} over a renewable crediting period of seven years, resulting in a calculated annual average of 173,253 tonnes CO_{2e} represents a reproducible estimation using the assumptions given by the project documents.

Work carried out by:	Markus Knödlseder (Project manager, GHG auditor) Klaus Nürnberger(GHG auditor) Wilson Tomao (Local expert, GHG auditor)	**Internal Quality Control by**: Werner Betzenbichler

Abbreviations

AOE	Applicant Operational Entity
CAR	Corrective action request
CDM	Clean Development Mechanism
CER	Certified Emission Reduction
CR	Clarification request
DNA	Designated National Authority
DOE	Designated Operational Entity
EIA / EA	Environmental Impact Assessment / Environmental Assessment
ER	Emission reduction
GHG	Greenhouse gas(es)
KP	Kyoto Protocol
MP	Monitoring Plan
ONS	Operacão Nacional do Sistema
PDD	Project Design Document
SSC	Small Scale
TÜV SÜD	TÜV Industrie Service GmbH – TÜV SÜD Group
UNFCCC	United Nations Framework Convention on Climate Change
VP	Validation Protocol
VVM	Validation and Verification Manual

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1 INTRODUCTION

1.1 Objective

Piratini Energia S.A. has commissioned TÜV Industrie Service GmbH – TÜV SÜD Group (TÜV SÜD) to validate the Piratini Energia S.A. Project.

The validation service is design verification and a requirement of all CDM projects. The purpose of a validation is to have an independent third party assessment of the project design. In particular, the project's baseline, the monitoring plan (MP), and the project's compliance with relevant UNFCCC and host country criteria are validated in order to confirm that the project design as documented is sound and reasonable and meets the stated requirements and identified criteria. Validation is a requirement for all CDM projects and is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of certified emission reductions (CERs).

UNFCCC criteria refer to the Kyoto Protocol criteria and the CDM rules and modalities as agreed in the Bonn Agreement and the Marrakech Accords.

1.2 Scope

The validation scope is defined as an independent and objective review of the project design document, the project's baseline study and monitoring plan and other relevant documents. The information in these documents is reviewed against Kyoto Protocol requirements, UNFCCC rules and associated interpretations. TÜV SÜD has, based on the recommendations in the Validation and Verification Manual employed a risk-based approach in the validation, focusing on the identification of significant risks for project implementation and the generation of CERs.

The validation is not meant to provide any consulting towards the client. However, stated requests for clarifications and/or corrective actions may provide input for improvement of the project design.

The audit team has been provided with a draft PDD April 2005. Based on this documentation a document review and a fact finding mission in form of an on-site audit has taken place. Afterwards the client decided to revise the PDD according to the CARs and CRs indicated in the audit process. The final PDD version submitted in October 2005 serves as the basis for the assessment presented herewith. That final PDD has been submitted in which next to responses to the issued CAR/CRs the project participants have been changed. All changes aim at a clarification of open issues and have resulted in substantiating the arguments given in the final version of the PDD. The changes are not considered to be significant with respect to the qualification of the project as a CDM project - as they rather have helped to clarify single aspects. Hence no repetition of the public stakeholder process has taken place.

Studying the existing documentation belonging to this project, it was obvious that the competence and capability of the validation team has to cover at least the following aspects:

- Knowledge of Kyoto Protocol and the Marrakech Accords
- Environmental and Social Impact Assessment
- Skills in environmental auditing (ISO 14000, EMAS)
- Quality assurance
- Technical aspects of hydro power plants and grid operation
- Monitoring concepts
- Political, economical and technical random conditions in host country

According to these requirements TÜV SÜD has composed a project team in accordance with the appointment rules of the TÜV certification body "climate and energy":

Markus Knödlseder: After his professional training as chemical assistance Mr. Knödlseder studied environmental engineer at the University of Applied Science in Bingen, Germany. Beside his main focus in studies of environmental technologies, he dealt with environmental management and environmental controlling issues. He has been a staff at the department "Carbon Management Service" located in the head office of TÜV Industrie Service GmbH, TÜV SÜD Group in Munich since Oct. 2001. He has been involved in the topic of environmental auditing, baselining, monitoring and verification due to the requirements of the Kyoto Protocol with special focus on renewable energies. Mr. Knödlseder is also an auditor for environmental management systems (ISO 14.000).

Klaus Nürnberger is head of the division energy certification at TÜV Industrie Service GmbH TÜV SÜD Group. In his position he is responsible for the implementation of verification and certifications processes for electricity production based on renewable sources. The division has assessed more than 600 plants and sites all over Europe. He has received extensive training in the CDM and JI validation processes and participated already in several CDM and JI project assessments.

Mr. Wilson Tomao is lead auditor and former manager of TÜV Bayern Brazil. He is familiar with local laws and regulations and the assessment of technical installations. He assisted Mr. Betzenbichler during the on-site inspections and by evaluating documents submitting in Portuguese language.

The audit team covers the above mentioned requirements as follows:

- Knowledge of Kyoto Protocol and the Marrakech Accords (KNÖDSLEDER/NÜRNBERGER)
- Environmental and Social Impact Assessment (KNÖDSLEDER/NÜRNBERGER)
- Skills in environmental auditing (ALL)
- Quality assurance (KNÖDSLEDER/NÜRNBERGER)
- Energy generation technologies (NÜRNBERGER, KNÖDLSEDER)
- Methane avoidance (NÜRNBERGER)
- Technical aspects of methane avoidance, methane generation in disposals and grid operation (KNÖDSLEDER/NÜRNBERGER)
- Monitoring concepts (ALL)
- Political, economical and technical random conditions in host country (TOMAO/KNÖDLSEDER)

In order to have an internal quality control of the project, a team of the following persons has been composed by the certification body "climate and energy":

- Werner Betzenbichler (head certification body "climate and energy")

1.3 GHG Project Description

The primary objective of the Piratini Project is to help meet Brazil's rising demand for energy due to economic growth and to improve the supply of electricity, while contributing to the environmental, social and economic sustainability by increasing renewable energy's share of the total Brazilian (and the Latin America and the Caribbean region's) electricity consumption

The project consists in the generation of electricity with a thermoelectric power plant using wood residues from nine wood processing companies in the city of Piratini, in the State of Rio Grande do Sul, Brazil.

The electricity is generated with a high-pressure boiler (operating conditions: pressure, 42 kgf/cm^2, steam temperature, 440 °C, steam production 50,000 kg/h) and a multiple stage condensing steam turbine (output pressure 0.083 kgf/cm^2) coupled with a 10 MW_{el} power generator.

In January 2002 the entire power plant was completed, and the Piratini Project sold its first MWh to the local power utility CEEE. The Piratini Project buys wood residues from sawmills on the region, which guarantee the supply to the city of Piratini.

The power plant when fully operational consumes around 150,000 tonnes of wood residues per year, which are fully provided by sawmills of the region. All sawmills process roughly 220,000 tonnes of wood per year. They buy wood from a sustainable pinewood forest of 17,000 hectares, which is reforested in the rate of 500 hectares per year.

A second component of the project is thus related to the substantial reductions in methane emissions from the wood waste, which used to be left to decay. Wood residues have come from three different types of sources (sawmill, clearing roads, and landfill).

2 METHODOLOGY

The project assessment aims at being a risk based approach and is based on the methodology developed in the Validation and Verification Manual (for further information see www.vvmanual.info), an initiative of all Applicant Entities, which aims to harmonize the approach and quality of all such assessments.

In order to ensure transparency, a validation protocol was customised for the project, according to the Validation and Verification Manual (VVM). The protocol shows, in a transparent manner, criteria (requirements), means of verification and the results from validating the identified criteria. The validation protocol serves the following purposes:

It organises, details and clarifies the requirements a CDM project is expected to meet;

It ensures a transparent validation process where TÜV SÜD has documented how a particular requirement has been validated and the result of the validation.

The validation protocol consists of three tables. The different columns in these tables are described in Figure 1

Validation Protocol Table 1: Mandatory Requirements			
Requirement	Reference	Conclusion	Cross reference
The requirements the project must meet.	Gives reference to the legislation or agreement where the requirement is found.	This is either acceptable based on evidence provided (OK), or a Corrective Action Request (CAR) of risk or non-compliance with stated requirements. The corrective action requests are numbered and presented to the client in the Validation report.	Used to refer to the relevant checklist questions in Table 2 to show how the specific requirement is validated. This is to ensure a transparent Validation process.

Validation Protocol Table 2: Requirement checklist				
Checklist Question	Reference	Means of verification (MoV)	Comment	Draft and/or Final Conclusion
The various requirements in Table 1 are linked to checklist questions the project should meet. The checklist is organised in seven different sections. Each section is then further sub-divided. The lowest level constitutes a checklist question.	Gives reference to documents where the answer to the checklist question or item is found.	Explains how conformance with the checklist question is investigated. Examples of means of verification are document review (DR) or interview (I). N/A means not applicable.	The section is used to elaborate and discuss the checklist question and/or the conformance to the question. It is further used to explain the conclusions reached.	This is either acceptable based on evidence provided (OK), or a Corrective Action Request (CAR) due to non-compliance with the checklist question (See below). Clarification is used when the validation team has identified a need for further clarification.

Validation Protocol Table 3: Resolution of Corrective Action and Clarification Requests			
Draft report clarifications and	Ref. to checklist question in table 2	Summary of project owner response	Validation conclusion

corrective action requests			
If the conclusions from the draft Validation are either a Corrective Action Request or a Clarification Request, these should be listed in this section.	Reference to the checklist question number in Table 2 where the Corrective Action Request or Clarification Request is explained.	The responses given by the Client or other project participants during the communications with the validation team should be summarised in this section.	This section should summarise the validation team's responses and final conclusions. The conclusions should also be included in Table 2, under "Final Conclusion".

Figure 1 Validation protocol tables

The completed validation protocol is enclosed in Appendix A to this report.

2.1 Review of Documents

The PDD and additional background documents related to the project design and baseline were reviewed. Those documents were submitted by the Ecoinvest, Brazil, the consultant of Piratini Energia S.A.

2.2 Follow-up Interviews

On May 26, 2005 TÜV SÜD performed interviews with project stakeholders to confirm selected information and to resolve issues identified in the document review. Representatives of EcoInvest, Piratini Energia S.A. and affiliated companies were interviewed. The main topics of the interviews are summarised in Table 1. The complete and detailed list of all persons interviewed is enclosed in Appendix B to this report. Further information received by following telephone conferences and by e-mail.

Table 1 Interview topics

Interviewed organisation	Interview topics
EcoInvest, Piratini Energia S.A. and affiliated companies	Project design, Baseline, Monitoring Plan, Environmental Impacts, Stakeholder Comments
Operacão Nacional do Sistema (ONS)	Brazilian national electricity grid, data availability data content.

3 VALIDATION FINDINGS

In the following sections the findings of the validation are stated. The validation findings for each validation subject are presented as follows:

1) The findings from the desk review of the final project design document and the findings from interviews during the follow up visit are summarised. A more detailed record of these findings can be found in the Validation Protocol in annex 1.

2) Where TÜV SÜD had identified issues that needed clarification or that represented a risk to the fulfilment of the project objectives, a Clarification or Corrective Action Request, respectively, have been issued. The Clarification and Corrective Action Requests are stated, where applicable, in the following sections and are further documented in the Validation Protocol in annex 1. The validation of the project resulted in two Corrective Action Request and five Clarification Requests.

3) Where Clarification or Corrective Action Requests have been issued, the exchanges between the Client and TÜV SÜD to resolve these Clarification or Corrective Action Requests are summarised.

4) The final conclusions for validation subject are presented.

The validation findings relate to the project design as documented and described in the final project design documentation.

3.1 Project Design

3.1.1 Discussion

The project claims two tracks of emission reductions. One source is the substitution of electricity generated by diesel and the second the avoidance of methane from decayed biomass. In spite of that combination the project is within the characteristics of the simplified modalities and procedures for small-scale CDM project activities.

Following approved methodologies are applied:

Type I.D Renewable electricity generation for a grid

Type III.E Avoidance of methane production from biomass decay through controlled combustion

As the project claims two tracks for generating CERs both sources have to analysed according to the characteristics of the simplified modalities and procedures for small-scale CDM project activities, which are:

Type (i) project activities: renewable energy project activities with a maximum output capacity equivalent to up to 15 megawatts (or an appropriate equivalent) (decision 17/CP.7, paragraph 6 (c) (i))

Type (iii) project activities: other project activities that both reduce anthropogenic emissions by sources and directly emit less than 15 kilotonnes of carbon dioxide equivalent annually (decision 17/CP.7, paragraph 6 (c) (iii)):

The project itself does qualify as a small scale project as it fulfils the requirements defined in paragraph 6 (c) of decision 17/CP.7 on the modalities and procedures for the CDM.

Similar to above characteristics the project boundaries have to be defined for each claimed project type. According to the applied and approved methodologies they are:

Type I.D The project boundary encompasses the physical, geographical site of the renewable generation source.

Type III.E The project boundary is the physical, geographical site where the treatment of biomass takes place.

The project boundary for type I.D is well defined and clearly applicable to the project. The methodology for project type III.E allows interpretation in its wording.

The wording of "the place where the treatment of biomass takes place" is interpretive. It is not clear if the place of treatment includes only the controlled combustion or the wood processing. In the submitted project sawmills around the power plant of Piratini Energia S.A. are delivering the wood waste from its wood processes, from its forest directly and from its old disposals. A wide interpretation could include all wood processing and also the old disposal.

Due to the rejection of the project Olavarría Landfill Gas Recovery Project in the 19th EB meeting (http://cdm.unfccc.int/EB/Meetings/019/eb19repan13.pdf) and according to the applied methodology (AMS-III.E.) the validation team interprets the project boundary at first in a conservative manner. The methodology states: "The boundary is the physical, geographical site where the treatment of biomass takes place." In a conservative manner the treatment of biomass in the submitted project starts in sawmill where the wood waste is produced. There has been extensive discussion whether the project qualifies as SSC project. The validation team follows the interpretation of the project developer. That opinion is additionally reasoned by the fact that the methodology does not consider any emissions from a potentially included disposal. Also, an exclusion of the old disposals from the project boundary is fleshed out by the fact that the complete wood processing is not under the control of the project owner; the project owner can just control the wood waste which is prepared for combustion in his plant.

The project design engineering does reflect current good practices. Piratini Energia S.A., and its affiliated companies Koblitz Ltda. and Brennand Group have a substantial track record in the field of renewable energy engineering, management and maintenance. The project is professionally managed and the applied technology represents state of the art technique. Most of the installed equipment is produced in Brazil. All installed and relevant equipments are listed in the final PDD.

In order to implement the project successfully and to operate the power plant as presumed during the project period, the staffs need extensive initial training and maintenance efforts. An appropriate maintenance and management system was installed that ensures the further operation of the project.

The project has to obtain different permissions and licences for operation. The relevant documentation is described in the PDD and the corresponding documents have been submitted to TÜV SÜD. Additional the legal situation of the wood supplier and its sustainable wood management was validated by TÜV SÜD.

From a sustainable development perspective the project has to be seen positive. It created employment opportunities during the construction phase of the project and in addition during the operation and maintenance phase of the project. Almost 80% of the employees are expected to be from the local and regional area.

The project's starting date is defined in the PDD as the date of starting operation in 2002. Project idea and the start of financial planning were done during the year of 2001; the engineering and construction had started in the beginning of 2001 and in Oct. 2001 the first test phases were done. Hence, the chosen starting date defined as start of operation is comprehensible.

The crediting period is clearly defined.

3.1.2 Findings

During the document review and the on site visit following Corrective Action Requests (CARs) were identified.

Outstanding issue:

The project has not yet obtained a Letter of Approval issued by the host country.

Response:

The response will be given by the issuance of the Letter of Approval. This has not happened so far for the host-country side as the approval of the project depends on the review of the validation report which has to be submitted in advance.

Clarification Request No. 1:

The project developer shall describe how the amount of 7987 tCO2e is calculated. It has to be demonstrated that the project emissions will be not more than 15000 tCO2e per year.

Response:

The project developer provided reliable information by the revised PDD and additional information.

Clarification Request No. 2:

Due to that the project is already installed, the specific components and measurement equipment has to be listed in detail, as information is already available on site.

Response:

All information on installed equipment is submitted correctly in the final PDD.

3.1.3 Conclusion

The project boundary is clear; no findings regarding the project design are identified. According to the interpretable wording of methodology type III.E the validation team follows the project owner's view in defining the project boundary by excluding the old disposals.

Missing information, calculations and installed equipment was completed by the onsite visit and by additional information submitted by Ecoinvest.

The Letter of Approval issued by the host country should be submitted to the audit team before requesting registration. The project complies with the requirements on the project design.

3.2 Baseline and Additionality

3.2.1 Discussion

The project claims two methodologies; first emission reduction against the baseline is the avoidance of methane; the second is the substitution of electricity from other fossil power plant in the grid.

The selected baseline methodologies are eligible for the relevant project categories and are applicable to the project being considered. The application of the baseline methodology and the discussion and determination of the chosen baseline is transparent and conservative.

Concerning the methane avoidance aspect the baseline of the project is the continuation of the old situation which was the operation of sawmills and disposing the wood waste without any using and energy production in open fields.

Regarding the proposed baseline scenario there are two aspects that need to be discussed:

1. The disposing of wood in open field disposals, and
2. The amount of wood that generate methane when it would be disposed.

To1) the disposing of wood in open field disposals is a elementary situation in order to generate methane by rotting organic material like wood. A baseline scenario assumes that the biomass will be disposed under anaerobic conditions.

To 2) as mentioned above the project claims CERs from the avoidance of methane. A conservative approach means to consider only wood, which really would emit methane. The biomass power plant gets wood from different sawmills. The wood mix in general can be clustered in to three groups: One source being real wood waste from the sawmill process, a second one is wood waste from the old disposals and the third one is wood collected from the forest, i.e. residues being useless for sawmills and hence being left in the forest usually. That wood collecting is done by the power plant operator. The wood waste that comes direct from the wood processing and from the old disposal would emit methane, if it is not burned by the power plant, but the residues coming directly from the forests will under conservative assumptions not emit methane, because the conditions there are not necessarily anaerobic. Hence, a conservative approach does not account that wood for claiming methane avoidance.

The project of Piratini is connected to the national power systems. The emission of carbon dioxide is based on the Brazilian energy mix. The Brazilian grid organized in a national wide grid and regional sub-grids. The baseline of the project for substituting electricity from fossil fuels is the national wide grid. Sub-grids are dominated by a voltage below 138 kV and the national wide is higher than 138 kV. The national wide grid is managed a national dispatch centre, called Operacão Nacional do Sistema (ONS). ONS controls approx. 80% of all installed power capacities in Brazil. However the baseline calculation has due to that and according to available data some weaknesses:

i. The ONS grid includes only 80% of installed capacity and 20% of installed power plants Brazilian power plants,
ii. ONS dispatch has control over power plant bigger than 30 MWel only,
iii. ONS has no control over sub grids below 138 kV.

In spite of those weaknesses the validation team confirms that the chosen baseline determination is transparent and according to approved methodology against the background of available data.

A further important step when assessing a baseline approach is to prove that the project itself does not represent the baseline scenario. For demonstrating that, the Executive Board established on its 16th meeting the "Tool for the demonstration and assessment of additionality". The project uses that tool for demonstrating its additionality, although it would not be necessarily required for small scale projects.

The company of Koblitz Ltda. made in 2000 first experiences with CDM by purchasing carbon credits to the Canadian government in the project of Piratini. Since that purchasing Ecoinvest has been ordered to analyse the project activities of Koblitz Ltda. regarding CDM opportunities. The project of Piratini was one of the selected projects which were undergoning a further consideration of the CDM.

In order to demonstrate the need of CDM the project owner and developer explained the difficulties in the Brazilian finance sector for project financing. The difficulties are reasoned by only less financing options from banks. In order to get loans the evidence of valuable guarantees is necessary.

3.2.2 Findings

For demonstrating the additionality of the project the project developer uses the Additionalty Tool from the EB.

That tool states that in step 1:

Sub-step 1b. Enforcement with applicable laws and regulations:

> *The alternative(s) should be in compliance with all applicable legal and regulatory requirements, even if these laws and regulations have objectives other than GHG reductions, e.g. to mitigate local air pollution.5 (This sub-step does not consider national and local policies that do not have legally-binding status.6).*
>
> *If an alternative does not comply with all applicable regulations and legislation, then show, based on an examination of current practice in the country or region in which the law or regulation applies, that the non-complying element of the alternative is currently widespread. If it cannot be shown that the non-compliance is widespread, then eliminate the alternative from further consideration;*
>
> *If the proposed project activity is the only alternative amongst the ones considered by the project participants that is in compliance with all regulations with which there is general compliance, then the proposed CDM project activity is not additional.*

Clarification Request No. 4:

The validation team is not convinced that the submitted project is not a likely scenario anyway.

That opinion is reasoned by available information in the environmental body (FEBAM) of the county of Rio Grande do Sul (Brazil); according to law No 38356 from 01/04/1998 companies are only allowed to disposal wood waste on own landfills only temporarily in order to wait for further transportation. It is prohibited to disposal wood waste on site without a special authorization, which includes the controlling of the soil by the company against contamination. Hence, the stated alternative of continuing the old treatment is not in line with national regulation and the project is not additional. Due to the legislation and the wrong stated alternative neither the baseline of methane avoidance nor the emission reduction by substituting electricity are additional.

The project participants have to consider the national regulation in demonstrating the additionality.

Response:

The revised PDD is discussing several courses of action all in line with the national/regional legislation.

Clarification request No. 5

The project owner shall provide reliable information in order to prove the serious consideration of CDM (step 0 test).

Response:

The company of Koblitz Ltda. which is affiliated with Piratini Energia S.A. made first very concrete experiences which CDM as described in the PDD (in 2000). This coincides with the time when the project owner decided to invest in that specific project. The serious consideration is also proved by the early engagement of EcoInvest, a specialized CDM consultancy company. For evidence the PIN note has been submitted dated more than half a year before the project has been set into operation. Furthermore the PPs claimed that their decision to apply the additionality test exceeds the requirements for SSC projects.

Clarification request No. 6

Due to missing background calculation and information the determination can not be confirmed as transparent and conservative.

After onsite visit and submitting the calculation the validation team can not confirm the transparency and conservativeness of the baseline. That opinion is reasoned due to the sources of wood residues which are combusted.

Clarification Request No. 7:

Evidences about first electricity supply shall be provided in order to verify the stated date.

Response:

The project activity started the test/commissioning phase in January 2002 (reliable evidence was submitted). In June 2002 the project activity was fully commercially operational.

3.2.3 Conclusion

The validation team recognises the economic, serious situation of sawmills in the region and their importance for local employment. As the project developer has demonstrated the sawmill operators and the responsible environmental agency have been looking already to an economic solution. The project itself is one of those alternatives.

The validation team agrees that the project helps sawmills to be in line with the law. It is not the purpose of CDM to support the implementation of national laws by supporting all those who do not follow the law. That would be contradictory; especially for those that try to be in line with national environmental law.

By the revised PDD the project developer presented further potential ways of action all resulting in the same baseline emissions leading to activities of transferring the biomass waste to disposals. As small scale methodologies do not require assessing every different course of action but do demonstrate that the project itself is not the baseline, the provided information is considered to be sufficient.

The project complies with the requirements.

3.3 Monitoring Plan

3.3.1 Discussion

As the project claims two sources for emission reductions and two methodologies in respective, the monitoring plan has to consider these both aspects.

According to methodology type III.E the significant key parameter is the amount of treated biomass. That value determines the baseline emissions and the project activity emissions. Apart from the energy content of the biomass, all other parameters can be taken from literature.

Leakages do not have to be monitored according to methodology type III.E.

However, regarding the treated biomass one aspect has to be considered in the monitoring plan in the submitted project. As already described above the power plant gets different kind of wood residues, but according to the methane avoidance approach of methodology type III.E only that wood can be accounted which would emit methane. Wood that comes direct from the forest has to be subtracted from the total combusted wood. Wood residues from the disposal has to be analysed according to its content, hence that mass can be contaminated with soil or already dissimilated biomass.

In isolated grids methodology type I.D considers only the amount of electricity that was produced and fed into the grid.

Leakages have to be monitored according to methodology type I.D if installed equipment is taken from an existing site and the existing site shall be refurbished.

3.3.2 Findings

Clarification Request No. 8:

It can not be verified, if the choices of project emission indicators that have to be monitored are reasonable until all underlying background calculations are not submitted. The project developer shall provide all underlying background calculations.

Response:

Appropriate information was submitted by the revised PDD.

Clarification Request No. 9:

According to methodology III.E significant leakages are not identified; however to methodology I.D leakages shall be considered and monitored, if the energy generating equipment is transferred from other activity.

As the turbine and the generator are transferred from other activity potential leakages shall be considered in the PDD and monitoring transparently.

Response:

The turbo-generator came from a fuel oil thermo power plant which was switched off by another company (Eletronorte) in Manaus, Amazonas. As the thermo plant used to operate with fuel oil no emission increase was caused.

Above and beyond, it must be clearly understood that the shut down of the fossil thermo power plant was not caused by the conception of the project activity. Also the project activity bought a turbo-generator with specified technical specifications but, of course, with no influence to specify from where it should come from. Then, no net change of anthropogenic emissions of greenhouse gases which occurs outside the project boundary and which is measurable and reasonably attributable to the CDM project activity exists. Hence, there is no leakage due to the project activity.

Clarification Request No 10:

The authority and responsibility of project management have to be clearly described in the PDD.

Response:

Credit owner and project operator, the special purpose company Piratini Energia S. A. (listed under A.3. Project participants), is author and the responsible for all activities related to the project management, registration, monitoring, measurement and reporting.

Clarification Request No 11:

The authority and responsibility of project management have to be clearly described in the PDD

Response:

Credit owner and project operator, the special purpose company Piratini Energia S. A. (listed under A.3. Project participants), is author and the responsible for all activities related to the project management, registration, monitoring, measurement and reporting.

Clarification Request No 12:

The procedures identified for monitoring, measurements and reporting have to be clearly described in the PDD.

Response:

In accordance with the approved methodology the PDD lists two data to be monitored:

Electricity quantity

The project owner measures with an electronic supervisory system the amount of total electricity generation, electricity exported to the grid, and electricity consumed by the project.

There is a meter that informs the supervisory system, this meter is periodically calibrated. The system keeps historical data that can be accessed when necessary.

Two meters are used to measure the electricity delivered to the grid (main meter and backup meter).

Double check is done with the receipt of sales issued by CEEE, the local electricity utility, in the case of exported electricity.

Therefore, the Priatini SSC-CDM Project is the main responsible for generating, monitoring, measuring and reporting data regarding electricity exportation to the grid.

Fuel quantity

The project owner monitors wood residues that are burned to generate electricity. The measurement is made at two stationary points: The first one is the total of biomass fed into the boiler. This data is obtained through a load cell that sends the information to the supervisory system. This historical data also can be obtained accessing the system. The second is a scale used to quantify wood residues entering the site. This measurement is made manually in the field using a periodically calibrated a mechanical scale. Every day this information is electronically store into a spreadsheet.

Clarification Request No 13:

The procedures for dealing with possible monitoring data adjustments and uncertainties have to be clearly described in the PDD

Response:

If any small divergence is found, equipments are re-calibrated. The numbers that lead to the smallest electricity generation and methane avoidance will be used if the uncertainty is not considered significant (less than 1% difference). The electricity generation and

methane avoidance will not be accounted for GHG emission reductions if the uncertainty is considered significant.

Clarification Request No 14:

The procedures for corrective actions have to be clearly described in the PDD.

Response:

The project owners could not identify any necessity of procedures for corrective actions related to the project management planning.

3.3.3 Conclusion

The validation team follows that point of view generally; a need for corrective actions regarding project managing planning can be identified if additional equipment is needed which have not been planed yet. Such changes are obvious and need no special procedures.

The validation team confirms that the monitoring plan is according to the requirements.

3.4 Calculation of GHG Emissions

3.4.1 Discussion

The calculation of emission reductions is mainly depending on the baseline, potential leakages, the monitoring and the parameter of both. For both applied methodologies the issues of baseline and project activity parameters are discussed sufficiently in above chapters. Relevant leakages are not identifiable. The calculation of emissions factors have been done in a transparent manner. The impact of using default literature factors for plant efficiencies is considered to be sufficient for small scale methodology as for the average emissions factor for all fossil fuel fired power plant the impact of higher data accuracy will be quite low.

3.4.2 Findings

None

3.4.3 Conclusion

The estimation of the projected emission reductions represents a reproducible estimation using the assumptions given by the project documents.

3.5 Environmental Impacts

3.5.1 Discussion

One requirement of the Marrakech Accords is the consideration of environmental impacts within a CDM project. Optional positive impacts can be mentioned in the PDD, but obvious negative environmental impacts should be described in the PDD. These impacts should be described also, if those impacts are assessed and confirmed by responsible local authorities. For such small projects the host country legislation requires not an EIA but a report about impacts that was performed.

3.5.2 Findings

Clarification Request No 15:

Identifiable environmental impacts shall be mentioned in the PDD, even if they are approved and in line with national law.

Response:

Potential environmental impacts identified were related to particulate matter emissions and wastewater management.

A multi-cyclone was installed to reduce particulate matter emissions, which are periodically monitored to assure compliance with the required environmental standards.

There is wastewater treatment facility inside the plant. Effluents are periodically monitored to assure compliance with the required environmental standards.

3.5.3 Conclusion

The project is in line with national and regional law. Additional information about environmental impacts and measurements against are described in the final submitted PDD. The validation team agrees with stated impacts and confirms that the project fulfil all requirements.

3.6 Comments by Local Stakeholders

3.6.1 Discussion

A local stakeholder process was done according to Brazilian requirements and additional through local articles in local newspaper. The following were invited

1. Following stakeholders were invited for comments:
1. Piratini´s City hall
2. Fundação Estadual de Proteção Ambiental - FEPAM
3. Piratini´s Secretary of the environment
4. Associação Comunitária Gapan - Associação Gaucha de Proteçao ao Meio Ambiente (State association of environmental protection)
5. Fórum Brasileiro de ONGs e Movimentos Sociais para o Meio Ambiente e o Desenvolvimento
(the association of all NGOs in Brazil)
6. Piratini´s City council
7. State attorney of the state

3.6.2 Findings

No findings identifiable.

3.6.3 Conclusion

The validation team confirms that the project fulfil all requirements.

4 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS

TÜV SÜD published the project document on UNFCCC website and on its own website on May 18, 2005 and invited comments for 30 days by Parties, stakeholders and UNFCCC accredited non-governmental organisations. The PDD and the comment are publicly available under the following link: http://www.netinform.de/KE/Wegweiser/Guide2E.aspx?Ebene1_ID=183.

The project and the published PDD states clearly and correct the applied methodologies which are type I.D. and III.E. The UNFCCC webpage stated however that methodology of type I.D. and III.D are applied, which is misstated.

As the really applied methodologies are mentioned correctly in the PDD; additional that confusion does not affect the assessment of the project and hence the commenting of the project, that confusion is a minor issue

4.1 Content of the comments received

No comments received.

4.2 Response by TÜV SÜD

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5 VALIDATION OPINION

TÜV SÜD has performed a validation of the Piratini Koblitz Energia S.A. Project, Brazil. The validation was performed on the basis of UNFCCC criteria as well as criteria given to provide for consistent project operations, monitoring and reporting.

In summary, it is TÜV SÜD´s opinion that the Piratini Project, as described in the revised project design document of October 2005, meets all relevant UNFCCC requirements for the CDM, set by the Kyoto Protocol, the Marrakech Accords and relevant guidance by the CDM Executive Board and that the project furthermore meets all relevant host country criteria and correctly applies the underlying small scale CDM project baseline and monitoring methodologies.

Hence, TÜV SÜD will recommend the "Piratini Project" for registration as CDM project activity by the CDM Executive Board.

Prior to the submission of this validation report to the CDM Executive Board, TÜV SÜD will have to receive the written approval of the DNA of involved parties, including confirmation by the DNA of Brazil that the project assists in achieving sustainable development.

Additionally the assessment team reviewed the estimation of the projected emission reductions. We can confirm that the indicated amount of emission reductions of 1,212,773 tonnes CO_{2e} over a renewable crediting period of seven years, resulting in a calculated annual average of 173,253 tonnes CO_{2e} represents a reproducible estimation using the assumptions given by the project documents.

The validation is based on the information made available to us and the engagement conditions detailed in this report. The validation has been performed using a risk based approach as described above. The only purpose of this report is its use during the registration process as part of the CDM project cycle. Hence, TÜV SÜD can not be held liable by any party for decisions made or not made based on the validation opinion, which will go beyond that purpose.

Munich, 2005-10-31

Werner Betzenbichler

TÜV Industrie Service GmbH TÜV SÜD Group
Certification Body "Climate and Energy"

Munich, 2005-10-31

Markus Knödlseder

Project Manager

Appendix A: Validation Protocol

Appendix B: Information Reference List

Appendix C: Stakeholder Comments

No comments received.

Appendix D:

Ecoinvest-Piratini-CDM SSCPDD validation clarifications-2005.06.22.doc